Kantronics version 1.03 Firmware Update for the Data Engine

Very little has changed in version 1.03, and most of the changes were made for compatibility with the Kantronics KAM/KPC line of communicators, version 3.xx

REROUTE – The REROUTE command will allow you to change the TO field of a message in your PBBS. First connect to the PBBS, then issue the command REROUTE n call (n is the message number and call is the new destination callsign).

HOST MODE change – The HOST mode will now process all data using the KISS transparency techniques. Previous version only processed certain commands through the KISS transparency.

CWID – The CWID command has been added, as some customers are required to send a CWID periodically, even when operating packet. This ID is active in all modes, including KISS mode operation.

RESTORE – The RESTORE command now accepts a new argument – DEFAULTS. If you issue the RESTORE DEFAULTS command, the Data Engine will revert to factory default parameters, asking for the callsign and then performing a soft reset. The MODE command will have the baud rate set to 0 by this command.

To update your version 1.02 manual, replace pages 21/22, 25/26, 39/40, 57/58 and Index 1/2 with the new pages.

If you have a version 1.0 manual, please contact the factory for the version 1.02 update to the manual.

General

Your Data Engine contains the Kantronics Personal Mailbox system which will allow you to leave messages for others which may be retrieved later. The personal mailbox is compatible with the large community bulletin board systems (RLI, MBL, etc) and will allow them to forward mail for you directly into your Data Engine. You may also place Personal or NTS type messages into your mailbox, and if the local Community BBS system allows, your Data Engine mailbox will forward these messages from your personal mailbox into the community system on request.

Configuring your PBBS

In order to enable your PBBS, you must set the MYPBBS callsign to be a unique callsign – that is, it cannot be the same as any other callsign in your Data Engine. You must also set the PBBS size, to allocate some RAM memory to the mailbox. This is accomplished with the PBBS command. The maximum setting allowable will depend on the amount of memory you have installed in your Data Engine. (See FREERAM command).

You may also want to set the inactivity timer (PBTIMER) for the PBBS, so that if someone connects to your PBBS, and suddenly stops sending data to the PBBS, then the system will automatically disconnect the user after a period of time. This will insure that a user doesn't tie up your Personal mailbox indefintely.

If you change the size of the mailbox, the Data Engine will automatically renumber any existing messages, beginning with number 1. If the new size is large enough for all existing messages, no messages will be lost.

At times, you may be away from your computer, and would like to switch a user into your mailbox automatically if he connects to your MYCALL. This can be accomplished by setting the CMSG command to PBBS. In order for this to operate, you must also have some message in the CTEXT. When this is done, a user who connects to your MYCALL will be sent your CTEXT first. Then, when the Data Engine receives the acknowledgement for the CTEXT, the user will be automatically connected to the PBBS. The Data Engine will then send the normal PBBS sign on ([DE1.02]), the PTEXT (if any) and the PBBS prompt.

Using the Data Engine PBBS

In order to use any Data Engine PBBS (even your own) first, get the cmd: prompt on your Data Engine, and then connect to the callsign of the PBBS. For instance, if MYPBBS is WK5M-3, I would simply type C WK5M-3. Since the PBBS is in my own Data Engine, no packets would be transmitted, but I would connect to the PBBS and receive the same prompt as if I had connected to someone elses PBBS.

When you connect to a Data Engine PBBS, you would first see the message from your TNC indicating that you are connected – *** CONNECTED TO WK5M-3. The PBBS will then send you its initial sign on message "[DE1.02]". If you have defined a PTEXT, the Data Engine will send it as the next line, and then it sends the PBBS command prompt. Example:

*** CONNECTED TO WK5M-3
[DE1.02]
PTEXT would be here (if any)
ENTER COMMAND: B,J,K #,KM,L,LM,R #,RM,S, or Help >

Using the PBBS is therefore the same, whether you are using your own PBBS or another persons PBBS. At this point, you are ready to send a message to another user, or issue any other mailbox command.

Let's assume I want to send a message to KA5ZTX. I would now use the send command:

S KA5ZTX

and the Data Engine responds with:

SUBJECT:

I now enter a short subject line:

Just a quick question

The PBBS now prompts you to enter your message:

ENTER MESSAGE--END WITH CTRL-Z OR /EX ON A SINGLE LINE

Now you enter the text of your message. To end the message and have it saved, type a CTRL-Z (hold down the control key and press Z), or type /EX. The CTRL-Z or /EX must be on a line by itself – do not type anything else on this line. When the message has been ended properly, the PBBS responds with:

ENTER COMMAND: B,J,K #,KM,L,LM,R #,RM,S, or Help >

You may now enter more mailbox commands. The commands available in the Data Engine PBBS are:

B	Causes the Data Engine PBBS to disconnect you from the mailbox
J	Sends a list of stations heard lately by the Data Engine. (If MHEARD is set to 0 this command will not be available.)
K #	Kill message number #
KM	Kill Mine
L	List all messages in the mailbox (If connected remotely, only lists those addressed to you, from you, or addressed to ALL)
LM	List all messages addressed to you
R #	Read message number #
RM	Read Mine
S	Send a message
H	Help – displays a short help menu

One additional command available from your own PBBS is REROUTE. This command lets you change the TO field of any message in your PBBS. The format of the REROUTE command is:

REROUTE n callsign

where n = message number and callsign = new TO field

Kantronics Host Mode Operation

In order to operate in the Host Mode with the Kantronics Data Engine, you must first set the INTERFACE command to HOST. After this is accomplished, it will be necessary to perform a soft reset in order to enter the Host Mode. This may be accomplished by typing RESET at the cmd: prompt. If you want the Data Engine to always operate in the Host Mode, be sure to give the command PERM INTERFACE. You will also need to set the MODE command to the appropriate baud rate for your terminal. If the MODE command is not set, the Data Engine will run its normal autobaud routine, looking for an asterisk (*) from the keyboard. When the asterisk is entered, the Data Engine will then immediately enter Host Mode. While operating Host Mode, your program must use hardware flow control (RTS/CTS). Software flow control is not possible in Host Mode.

Communications Format

Host computer to Data Engine

The communications from the host to the Data Engine must occur in blocks. The block of data is delimited with a FEND character at beginning and end ($C0). If the FEND character appears within the block, the host must replace this character with a special sequence, consisting of a FESC ($DB) followed by a TFEND ($DC). One other special sequence may be required in the event a FESC ($DB) character is required in the data field. This is accomplished by the special sequence of a FESC ($DB) followed by a TFESC ($DD). These special sequences are the same used in the KISS code, as implemented by Phil Karn, KA9Q.

The next character is the command byte and will indicate the type of command being given to the Data Engine. The permissible characters in the command byte are C, D, or Q. A 'C' indicates a command which the Data Engine will interpret as if it were in the Command Mode. If the command byte is a 'D', the Data Engine will consider the data as data to be transmitted on the specified port and stream. The letter 'Q' in the command byte will cause the Data Engine to exit the Host Mode and return to Terminal Mode.

The next byte is the port byte. This byte must be used with every block of type 'D' to signify which port, 1 or 2, is to be used for transmission of the data. Type 'C' blocks must always specify this byte as either a 1 or 2, but this is only used on those commands which are specific to a port. This would include the CONNECT and DISCONNECT commands.

The fourth byte is the stream byte. This byte determines which stream (A-Z) the Data Engine will use for the data. If the stream byte is 0 for a data packet (command byte D), the data will be sent out UNPROTO. For commands that do not involve a specific port or stream, the port and stream bytes are ignored, but must be specified. In these cases, you should address port 1 and stream A.

After these four header bytes, the structure of the block for a command is exactly the same as if you were entering the command from the Terminal Mode of the Data Engine. If entering data to be transmitted, simply place the data in the following bytes.

After the data or command, terminate the information from the host with a FEND ($C0) character.

Data Engine to Host Computer

Communications from the Data Engine to the host also occurs in blocks, which are delimited at beginning and end with FEND characters ($C0).

After the beginning FEND, the next character is the status byte. A status byte 'C' is a response to a command from the host with the command byte 'C'. A status byte of 'D' indicates that the data was received on a connected stream. 'M' in the status byte means that the data in this block is the result of the monitor commands.

A status byte of 'S' is a status message caused by a change in the link state. Such messages include the *** CONNECTED TO, *** DISCONNECTED, and FRMR sent: types of messages. A special 'S' block of data consists of two FEND characters, the characters S00 and another FEND character. This indicates that the Data Engine has performed a soft reset, and all existing connections (if any) are no longer valid. This is equivalent to the Data Engine having just been turned on. A data block with the status byte 'R' is a *** CONNECT REQUEST. A block with a status byte 'T' is the result of the TRACE command. Port and stream bytes (defined below) are valid for 'D' and 'S' blocks, but only the port byte is valid for 'T', 'M' and 'R' blocks.

The port byte follows the status byte, and will contain the port number the specific information is from. This will be a '1' if the Data Engine is in single port operation, or a '1' or '2' if in dual-port operation.

The stream byte follows the port byte. The stream byte will be 'A' - 'Z' for data on connected streams. Data being sent to the host which is not connected data, will have the stream byte set to '0'.

If the Data Engine returns a 'C' status block with no data, this indicates that the command was accepted. This will occur on connect and disconnect commands.

A 'T' block from the host (TRACE information) is raw data, and not a hex dump of the received packet.

The KISS transparency (FESC, FEND, TFEND, TFESC) described above is always applied to all blocks.

● **CONOk** ON|OFF

default ON DUAL-PORT

When ON, connect requests from other TNCs will be automatically acknowledged and a <ua> packet will be sent. The standard connect message will be output to the terminal, and the Data Engine will enter the CONMODE specified.

When OFF, connect requests from other TNCs will not be acknowledged, and a <dm> packet will be sent to the requesting station. The message "connect request: (call)" will be output to your terminal.

When operating with multiple connects allowed, the connection will take place on the next available stream. Connect requests in excess of the number allowed by the USERS command will receive a <dm> response, and the "connect request: (call)" message will be output to your terminal.

See also: INTERFACE, CONMODE, CONNECT, MAXUSERS, USERS

● **CONVers**

immediate

CONVERS has no options. It is an immediate command and will cause the Data Engine to enter the Conversational Mode from Command Mode on the current I/O stream. Any link connections are not affected.

See also: K, COMMAND

● **CPactime** ON|OFF

default OFF

When OFF and in the Convers Mode, packets are sent when the SENDPAC character is entered or when PACLEN is achieved. When ON and in the Convers Mode, packets are sent at periodic intervals determined by PACTIME. Characters are sent periodically as in Transparent Mode, but the local editing and echoing features of Convers Mode are enabled. CR should normally be OFF in this configuration, otherwise the SENDPAC character is appended at random intervals as the input is packetized by the timer.

See also: CONVERS, CR, PACLEN, PACTIME, SENDPAC, TRANS

● **CR** ON|OFF

default ON

When ON the SENDPAC character (normally carriage return) is appended to all packets sent in Convers Mode. Setting CR ON and SENDPAC $0D results in a natural conversation mode. Each line is sent when a <CR> is entered and arrives at its destination with the <CR> appended to the end of the line. To avoid overprinting, AUTOLF may need to be ON at the receiving end.

See also: AUTOLF, SENDPAC

● **CStamp** ON|OFF

default OFF

When ON, the daytime stamp is printed with all "*** CONNECTED TO" and "*** DISCONNECTED" messages on the terminal.

See also: CONNECT, DAYTIME, DAYSTRING, DISCONNECT, MSTAMP

● **CText** text (maximum 256 characters, including the command)
default (blank) DUAL-PORT

Enter any combination of characters and spaces up to a maximum length of 256. Entering a single "%" will clear CTEXT. This entry specifies the text of the automatic message to be sent in response to an accepted connect request provided that the parameter CMSG is not OFF.

See also: CMSG

● **CWID** [{Every | After}] [n] [{Tone | Key}] (n = 0 - 255) v1.03
default After 0 Key DUAL-PORT

Each increment specifies 1 minute intervals. A value of 0 turns the ID OFF. Setting a value greater than 0 activates the ID under the conditions specified. If the optional keyword Every is used, an ID will be sent every n minutes. If set to After, an ID will be sent ONCE after the specified interval with no channel activity. If the optional keyword Tone is used the callsign specified by the MYCALL command will be sent in CW using AFSK tones. If set to Key, the callsign will be sent by keying the PTT of the radio. Some countries require all stations to ID in Morse code periodically.

See also: mycall

● **DAYString** dayform
default dd/mmm/yy hh:mm:ss

This command will set the format for display of the date and time from the Data Engine. The format is free-form, with any text being permitted up to a total of 31 characters. The lower case characters m, d, y and s have special meaing to this command, and will be replaced with data from the software clock/calendar. The lower case character m will be replaced with the minutes the first time it appears after a lower case h. If the month is specified as a single m, months less than 10 will be displayed with a single digit. Likewise, if the day is specified as a single d, then days less than 10 will be single digit display. Entering two characters for month (mm) will force a two digit display for months less than 10, and two characters for day (dd) would force a two digit display. If the month is entered as three characters (mmm) the Data Engine will display the first three characters of the month name (FEB).

Use caution when entering real text into the display, as ALL lower case m, h, d, or s characters WILL be translated!

Some samples of possible strings and the resulting display would be:

mm/dd/yy hh:mm:ss	02/26/90 11:30:00
d.m.y h:mm:ss	26.2.90 11:30:00
d.mm.yy h:mm	26.02.90 11:30
mmm d 19yy h:ss CST	Feb 26 1990 11:00 CST
TIME: hh:mm DATE: mmm dd, 19yy	TIME: 11:30 DATE: Feb 26, 1990

See also: DAYTIME

● **RESptime** n (n = 0 - 255) [100 millisecond increments]

default 5 DUAL-PORT

The number specified establishes a minimum delay, in 100 millisecond increments, that is imposed on acknowledgement of information-bearing packets (I-frames). Delay may run concurrently with DWAIT (PERSIST and SLOTTIME) and any other random delays in effect. This command is useful in avoiding collisions during such activity as file transfers using full-length packets.

See also: FRACK

● **RESTore** ALL | parameter | DEFAULTS

immediate

This command will set the specified parameter to the value last PERMed. This allows you to change any parameter to a new value, and still be able to recall the last PERMed value. If ALL is specified, the Data Engine will recall ALL parameters from the battery backed-up RAM. This is the same condition you would have if you had turned the Data Engine off and then on again. If the command RESTORE DEFAULTS is given, the Data Engine will revert to factory default settings, ask for your callsign, and then perform a soft reset. The MODE baud rate will be set to 0 but the unit will not perform the autobaud routine. These settings are not PERMed, so turning the unit OFF and then ON (or giving the command RESTORE ALL) will return you to the PERMed values.

See also: PERM, RESET

● **RETry** n (n = 0 - 15)

default 10 DUAL-PORT

This command specifies the number of packet retries. Packets are re-transmitted n times before the operation is aborted. The time between retries is specified by the command FRACK.

See also: AX25LVL, FRACK

● **RIng** ON | OFF

default ON

When ON, three bell characters ($07) are sent to the terminal with each "*** CONNECTED TO" message when a connect request is received from another station.

● **RText** text (maximum 256 characters, including the command)
default (blank)

This string is used to develop the authorization for access to the MYREMOTE. A long string should be placed in this parameter if the MYREMOTE is going to be used. When a station connects to the MYREMOTE, the Data Engine will generate a series of six (6) random numbers between 1 and the length of this string. The six numbers will be sent to the connected user, and the Data Engine will not allow remote access unless the user correctly decodes the six numbers. These numbers correspond to the position of the characters in the RTEXT string. The user will be given a maximum of three attempts to decode the string. If the user fails to decode the string properly, the Data Engine will disconnect the user and start the 15 minute penalty timer. No new connects to the MYREMOTE are possible until the timer expires.

Case is significant when entering the decoded string, and spaces must ONLY be entered if they are a part of the string and the generated number is the location of a space. Once entered, a soft reset must be given to activate the desired change.

See also: MYREMOTE, REMTIMER, RESET

● **SEndpac** n (n = $00 - $FF)
default $0D (<CR>)

This command specifies a character that will force a packet to be sent in the Convers Mode. In the Convers Mode, packets are sent when the SENDPAC character is entered or when PACLEN is achieved.

See also: CPACTIME, CR

● **SLottime** n (n = 0 - 255) [10 millisecond increments]
default 10 DUAL-PORT

n specifies the amount of time between successive tries of the persistence algorithm.

See also: PERSIST

● **STARt** n (n = $00 - $FF)
default $11 (CTRL-Q)

This command specifies the character sent by the terminal to the Data Engine to restart input from the Data Engine. If set to $00, only hardware flow control will be used. For software flow control, set this parameter to the character the computer will send to restart data flow.

See also: FLOWX, STOP, XOFF, XON

● **Status** [LONG]
immediate

This command will display both the identifier and link state of any currently connected streams. The current input and output (IO) stream is also indicated. A pound sign (#) indicates that there is unacknowledged data in the buffers for that stream. If LONG is specified, all streams are shown in the listing.

See also: MAXUSERS, PBBS, STREAMSW

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